

Mathlete Training Centre  
WMI 2022 GRADE 6B

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1.  $\frac{1}{72} + \frac{1}{56} + \frac{1}{42} + \frac{1}{20} + \frac{1}{12} + \frac{1}{6} = ?$

- (A)  $\frac{7}{18}$     (B)  $\frac{11}{18}$     (C)  $\frac{16}{45}$     (D)  $\frac{19}{45}$

2. In Jenny's class, students have different birthdays, and the products of their month numbers and day of month numbers are all prime numbers. How many students are there in the class at most?

- (A) 11    (B) 14    (C) 15    (D) 16

3. How many 3-digit numbers have exactly two digits that are the same?  
(A) 270    (B) 252    (C) 243    (D) 234

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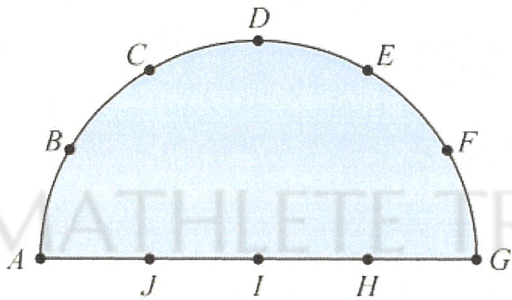
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4. The commonly used decimal numeral system consists of ten Arabic numerals from 0-9, and it has 10 as its base. If senary numeral system is used, which option below is wrong?  
(A)  $5 \times 5 = 41$     (B)  $4 \times 3 = 20$     (C)  $2 \times 5 = 14$     (D)  $3 \times 2 = 11$

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5. As shown in the picture, given ten points  $A, B, C, D, E, F, G, H, I$  and  $J$  on the semicircle along with the diameter. How many triangles can be formed using these points as vertices?



- (A) 120    (B) 110    (C) 100    (D) 96

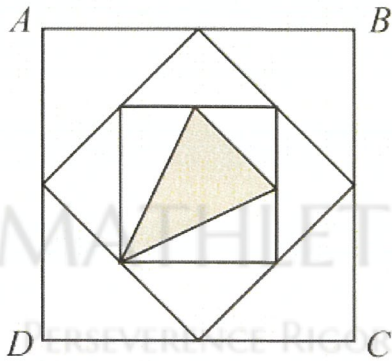
6. As shown below, the same letter represents the same number, different letters represent different numbers. Suppose the numbers outside the square represent the sums of the numbers in a row or a column, Find ★.

$A$	$B$	$C$	$C$	
$A$	$D$	$C$	$C$	46
$D$	$A$	$B$	$C$	42
$B$	$C$	$B$	$A$	43

★                  40

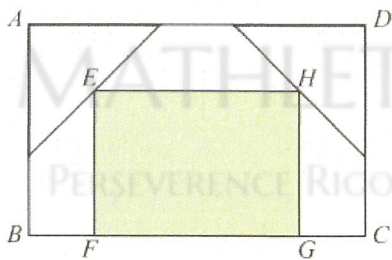
- (A) 45    (B) 44    (C) 43    (D) 41

7. In the picture, the area of the square  $ABCD$  is  $288\text{cm}^2$ . Suppose the other points are the midpoints on different sides, find the area of the shaded triangle in  $\text{cm}^2$ .



- (A) 27      (B) 25      (C) 24      (D) 18

8. As shown below. A rectangle  $ABCD$  of area 2022 is divided into a rectangle  $EFGH$ , two isosceles right triangles, and three trapezoids. Given that besides the shaded rectangle  $EFGH$ , the other five shapes have the same area, and  $E$  and  $H$  are the midpoints on the hypotenuses of the two isosceles right triangles. Find the approximate area of the rectangle  $EFGH$ .



- (A) 886      (B) 872      (C) 867      (D) 856

9. In an arithmetic sequence, the difference between two adjacent numbers is equal. For example, 1, 4, 7 and 10. If these four integers A, B, C and D make an arithmetic sequence in ascending order, and the sums of their digits make an arithmetic sequence in descending order, find the minimum value of  $A + B + C + D$ .

- (A) 68      (B) 72      (C) 84      (D) 108

10. Start from the 'W' in the upper left corner, a mouse follows the route of "WMI 2022" from one square to the next square with a common side. How many different routes are there to walk these 7 squares?

W	M	I	2	
M	I	2	0	
I	2	0	2	2
2	0	2	2	
		2		

- (A) 36      (B) 40      (C) 46      (D) 48